**Program: B.Sc Electronics and Communication System**

Course title: **Core - 9: Modern Instrumentation**  **S**ubject Code: 5CT09

Year: III Semester: V Credits: 4 Hrs/Week: 4

 **Unit-I Qualities of Measurement**

Introduction - Performance Characteristics - Static Characteristics - Errors In Measurement – Types of Static Error – Sources of Error – Dynamic Characteristics- - Statistical Analysis-Standard – Electrical standards – Atomic frequency and time standards.

**Unit-II Bridges**

Introduction- Wheatstone Bridge- Kelvin’s Bridge- Capacitance Comparison Bridge- Wien’s Bridge- Schering Bridge - Inductance Comparison Bridge - Maxwell’s Bridge - Hay’s Bridge.

**Unit-III Signal Analysis Instruments**

Oscilloscope: Basic principle – CRT features - Block Diagram - Vertical Amplifier - Horizontal Deflection System – CRT connections – Dual trace oscilloscope – Probes for CRO – Applications of oscilloscope – Introduction to Digital Storage Oscilloscope - Basic Wave Analyzer - Frequency Selective Wave Analyzer - Heterodyne Wave Analyzer- Harmonic Distortion Analyzer - Spectrum Analyzer.

**Unit-IV Transducer**

Introduction - Electrical Transducer – Selection of transducer –Active & Passive transducers - Resistive transducer: Strain gauges – Resistance thermometer – Thermistor - Inductive transducer: LVDT - Capacitive Transducer – Piezoelectric transducer – Photo electric transducer - Photovoltaic cell.

**Unit-V Data Acquisition Systems**

Introduction - Objective of a DAS-Signal conditioning of the input-Single channel DAS-Multi channel DAS-Computer Biased DAS - Data Loggers-Sensor based Computer Data Systems-Digital Transducer.

**Book for Study:**

1. Electronics Instrumentation - H.S. Kalsi, Third Edition, TMH Publishing Company Limited, 2010.

**Books for Reference:**

1. Electronic Instrumentation & Measurement Techniques - W.D.Cooper & A.D. Helfrick

2. Instrumentation Devices & Systems - C S Rangan, G.R. Sharma, V.S.V.Mani